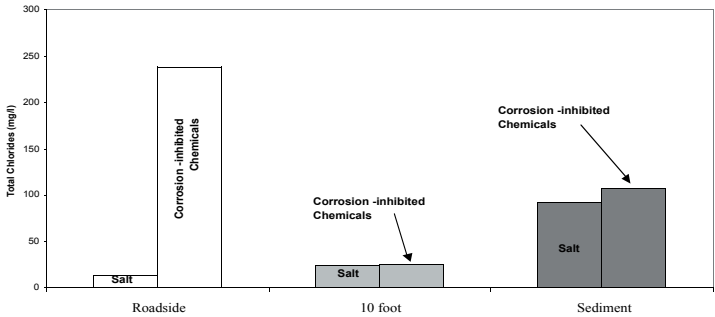


For more information, contact:  
**Rico Baroga, Maintenance Policy Manager**  
360-705-7864  
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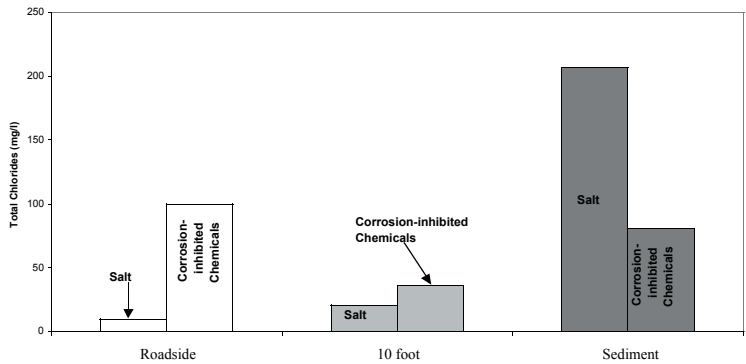
# Salt Pilot Project

March 2005

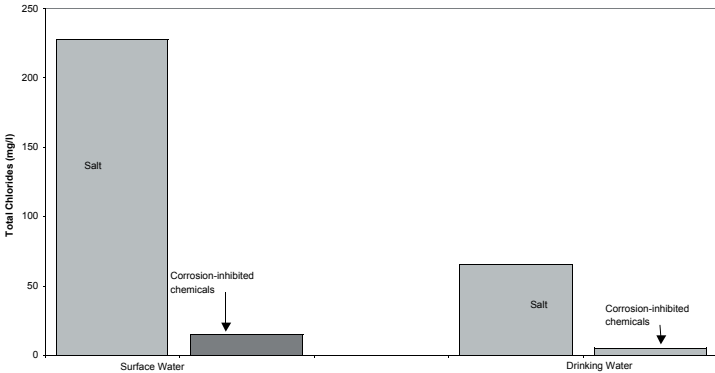
2002-03 Comparison of pre-winter chloride levels in soils between salt sections and corrosion-inhibited chemical sections



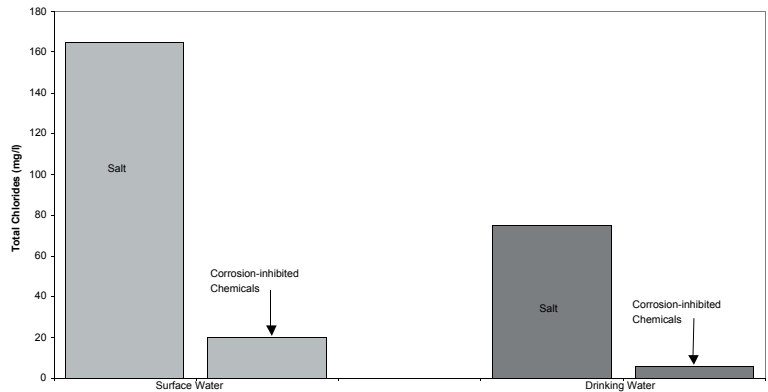
2002-03 Comparison of post-winter chloride levels in soils between salt sections and corrosion-inhibited chemical sections



2002-03 Comparison of pre-winter chloride levels in water between salt sections and corrosion-inhibited chemical sections



2002-03 Comparison of post-winter chloride levels in water between salt sections and corrosion-inhibited chemical sections



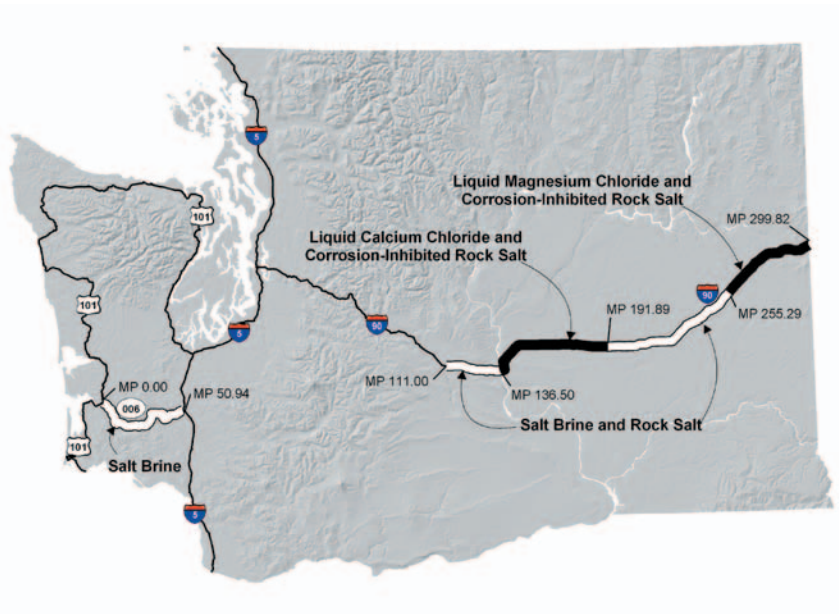
## Research Objectives

The general objective of this research project was to carry out a multi-faceted comparison of sodium chloride and corrosion-inhibited chemicals under real-world roadway conditions. Specific comparisons of chemicals include:

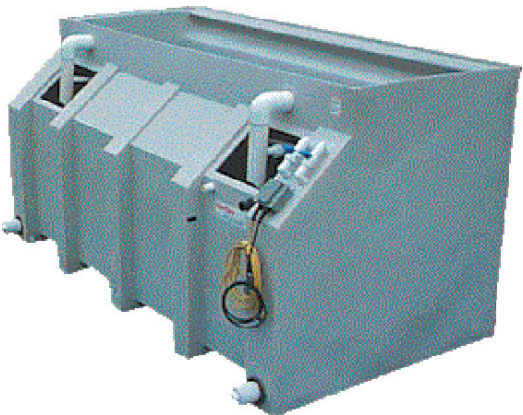
1. Snow and ice control costs.
2. The results (i.e., road conditions) of snow and ice control activities.
3. Corrosion of metal exposed.
4. Chloride levels in roadside soils, surface water, and underlying groundwater.



Metal coupons.



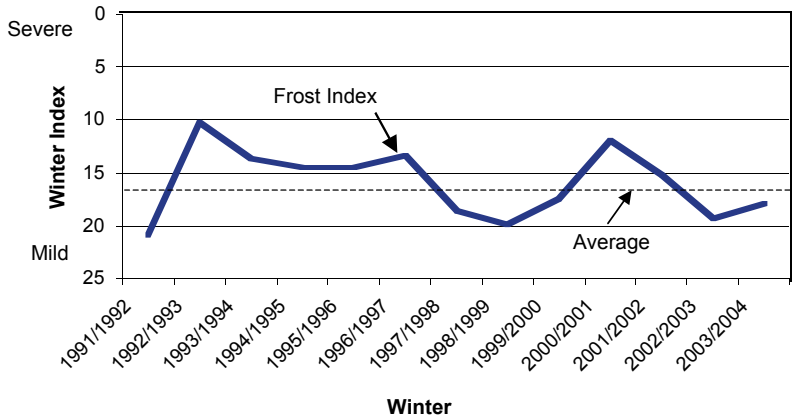
Salt and corrosion-inhibited chemical test sections.



Brine maker.

Frost Index

Mathematical calculation of winter severity based on daily hi/lo temperatures from November 1st to April 1st at 29 locations across the state. Number of “frost days” is a better severity indicator than snowfall as it reflects icy road conditions whether snow is present or not.



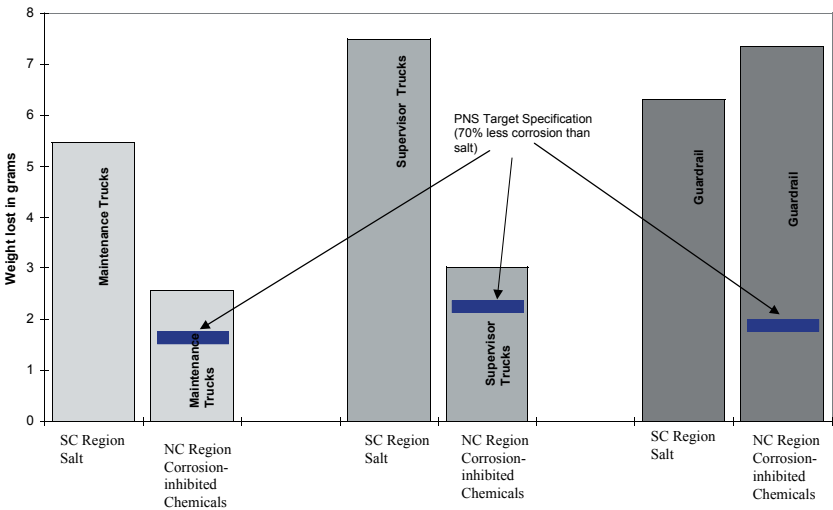
2002-03 Salt Pilot Project Cost Summary

Location	Labor	Equipment	Materials	Lane Miles	\$/Lane Mile
SC Region Salt	\$10,467	\$4,731	\$54,479	102	\$683
NC Region Corrosion-inhibited Chemicals	\$24,347	\$12,564	\$117,501	222	\$696
Eastern Region Salt	\$30,090	\$13,886	\$66,385	253	\$436
Eastern Region Corrosion-inhibited Chemicals	\$41,492	\$18,954	\$286,670	210	\$1,653
SW Region Salt	\$4,042	\$1,784	\$5,914	103	\$114

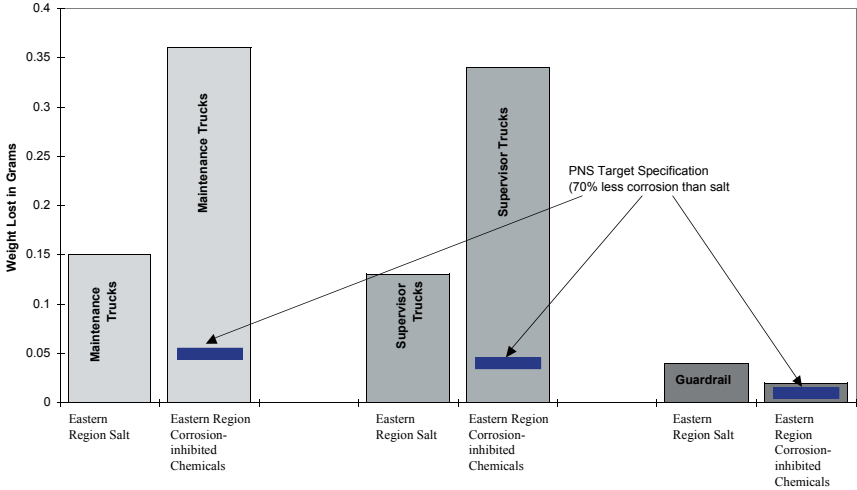
2003-04 Salt Pilot Project Cost Summary

Location	Labor	Equipment	Materials	Lane Miles	\$/Lane Mile
SC Region Salt	\$57,000	\$26,000	\$73,727	102	\$1,537
NC Region Corrosion-inhibited Chemicals	\$50,838	\$36,458	\$221,926	222	\$1,393
Eastern Region Salt	\$72,808	\$70,406	\$199,292	253	\$1,354
Eastern Region Corrosion-inhibited Chemicals	\$199,708	\$57,049	\$360,582	210	\$2,940
SW Region Salt	\$13,000	\$7,602	\$10,705	103	\$304

2002-03 Comparison of corrosion weight loss in steel coupons between SC salt section and NC corrosion-inhibited chemical section

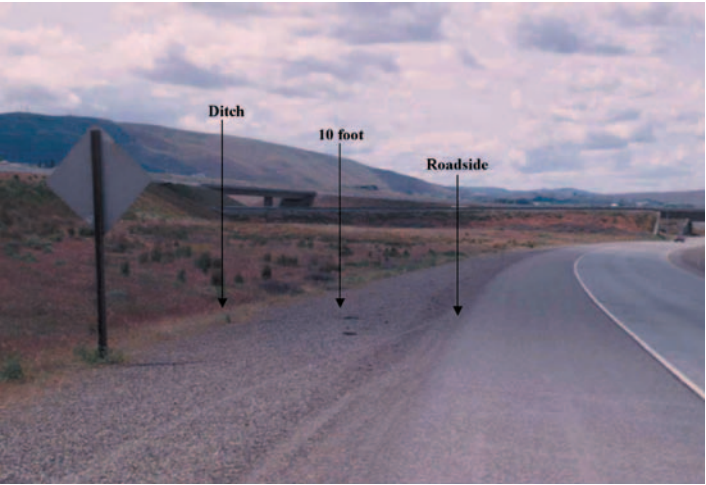


Comparison of corrosion weight loss in sheet aluminum coupons between Eastern salt section and Eastern corrosion-inhibited chemical section



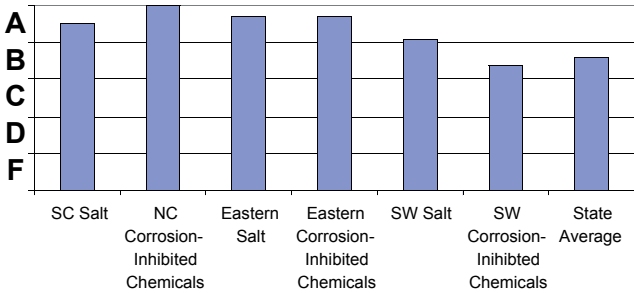
Environmental Impacts

As part of this pilot project, WSDOT environmental staff conducted field sampling and laboratory analysis to assess the level of chloride residue in the roadside environment. Similar to the other components of this evaluation, the environmental analysis focused on differences in chloride residue in the soil and water for the areas using corrosion inhibited chemicals and those using sodium chloride. Chloride at a concentration of 250 mg/l is a secondary drinking water standard for taste only. A secondary drinking water standard serves as a guideline and is used by regulatory agencies for chlorides instead of an actively enforced primary standard. Primary standards are used for substances that pose greater potential threats due to toxicity or other dangerous properties. Levels of chloride averaging approximately 40 mg/l occur naturally in Washington state drinking water. Chloride is not classified as a toxic substance by Washington State resource agencies. Studies have found that different plant species have widely ranging tolerance levels to chlorides. In



general terms, research has shown that freshwater fish begin to demonstrate ill effects from chloride exposure at concentrations between 4000 and 5000 mg/l.

2002-03 Level of Service



2003-04 Level of Service

